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a Digestive Diseases Clearinghouse Fact Sheet

GAS IN THE DIGESTIVE TRACT

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Though the subject of gas is not one that most of us talk about, the truth is that all of us have gas in our intestinal tract and must get rid of it in some way. **Flatulence*** (the passage of gas through the rectum) and belching are normal and necessary functions that allow the body to rid itself of gas.

Occasionally, gas collects in some portion of the digestive tract, a situation that can lead to pain and **bloating.** Also, some people seem to be more sensitive to normal amounts of gas in their digestive tracts. Though gas is not usually a sign of a problem, persistent and troublesome symptoms may mean that something is wrong. If you have any doubts, check with your doctor.

WHAT CAUSES GAS?

The most common source of gas is swallowed air. Each time we swallow, small amounts of air enter the stomach. This gas in the stomach may accumulate to be belched out or it may pass into the small intestine where part of it is absorbed. The rest travels into the colon to be passed out through the rectum.

Gas also can occur for any of the following reasons: Some people swallow air frequently because they have postnasal drip or chew gum. Rapid eating or poorly fitting dentures also may cause too much air to be swallowed. In addition, drinking carbonated beverages such as soda and beer may increase the amount of gas in the stomach.

WHAT CAUSES REPETITIVE BELCHING?

Some people experience repetitive belching. Usually, this occurs after a person has unconsciously swallowed air. The air stays briefly in the esophagus and then is belched back out. This habit can be broken if the person becomes aware of the air swallowing.

DO ANY FOODS CAUSE GAS?

The foods we eat can be a factor in the production of gas. Some foods—like cauliflower, brussel sprouts, dried beans, broccoli, cabbage, and bran—are not completely digested in the small intestine. When the undigested bits of food reach the colon, they are fermented by the bacteria that live in the colon. This **fermentation** often results in gas.

In recent years, the popular media has been full of claims about the benefit of eating a diet high in fiber. While fiber does seem to have a useful role for good nutrition and health, greatly increasing your fiber intake too rapidly can result in some distressing side effects. Increasing your fiber intake—that is, eating more whole grain cereals and breads, fresh fruits and vegetables, or more whole bran—can leave you feeling stuffed or bloated. It helps to remember that the digestive system works best if it is allowed to adjust slowly to any dietary change. While it is adapting itself to handling an increase in fiber, your digestive system may well produce more gas and you may experience some unpleasant symptoms.

Being **lactase** deficient is another frequent cause of excess gas. Lactase, an enzyme normally found in the small intestine, is responsible for digesting **lactose**, the sugar found in milk and other dairy products. When lactose passes undigested into the colon, bacteria ferment the sugar, causing gas.

If lactase deficiency is suspected of causing your gas,

* All words that appear in **boldface** are defined in the glossary at the end of this fact sheet.

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your doctor probably will tell you to eliminate dairy foods from your diet so that your symptoms can be evaluated. Lactase deficiency is common. With the exception of people of northern European heritage, most adults experience some trouble digesting milk and other dairy products. (More information about lactose intolerance is available from the Digestive Diseases Clearinghouse).

ARE THERE ANY OTHER SOURCES OF GAS?

Scientists are studying another possible source of intestinal gas. When stomach acid enters the duodenum—the uppermost part of the small intestine—it is neutralized by bicarbonate. Carbon dioxide is released during this process. Most of the gas is absorbed into the blood. The role of the remaining carbon dioxide is unclear, but some scientists think it may play a role in producing gaseous symptoms.

HOW MUCH GAS DOES THE BODY PRODUCE?

The amount of gas produced by the body varies considerably from person to person. Most people produce somewhere between 400 and 2,400 cc of flatus each day. Nitrogen is the principal component of flatus, and it comes from the air we swallow. When undigested bits of food—such as bran or lactose—enter the colon, bacteria ferment the particles, producing carbon dioxide and hydrogen and other gases, usually in a small amount.

Methane is produced by only one-third of the population. Its production does not seem to be affected by diet. All of the major components of flatus are odorless. The characteristic "unpleasant" odor of flatus is the result of **trace gases** such as hydrogen sulfide.

CAN GAS CAUSE ABDOMINAL PAIN AND DISTENTION?

Some people experience upper abdominal pressure and pain after eating. Usually, this can be relieved by belching. Some people deliberately swallow more air to make themselves belch. Such a practice is not recommended, however. It only adds to the amount of gas already in the stomach without reducing the discomfort.

Gas can collect anywhere in the colon. When gas accumulates on the right side of the colon, the pain can be similar to that caused by gallbladder disease. Gas in the upper left portion of the colon can result in a condition called the **splenic flexure syndrome.** The pain associated with this condition can spread to the left side of the chest and be confused with heart disease.

The bloating that occurs after eating is also thought to be caused by gas. However, studies have failed to show any connection between the symptoms and the total amount of gas in the abdomen.

Studies also show that in some people even normal quantities (30 to 200 cc) of gas in the intestine can cause spasms of the small or large bowel, especially after eating. Avoiding excessive swallowing of air and eating small, leisurely meals can help to prevent symptoms. Your doctor may prescribe medication to relax the muscles of the intestinal tract and relieve spasms.

A feeling of **distention** of the abdomen is also a common complaint. It often increases during the day and is most severe after the largest meal. Distention occurs more often in women who have had one or more pregnancies or in individuals who have lost the "tone" of their **abdominal rectus muscles** due to age or disease. If your abdomen is distended when you sit or stand, but is not when you are lying down, it is likely that the distention is related to muscular weakness rather than excess gas. A support garment or exercise to increase abdominal rectus muscle tone such as situps may relieve symptoms.

"NOTHING IS REALLY WRONG WITH YOU..."

Very often your gaseous symptoms will not be the result of a disease. If air swallowing, diet, and lax abdominal rectus muscles have been ruled out as the source of your problems and your tests have failed to reveal any abnormality, you may think or may be told "nothing is really wrong with you." This does not mean that your symptoms are "all in your head." Rather, your problems may be the result of a "functional disorder." A functional disorder is one in which there are no signs of disease, and yet your intestinal tract sometimes does not seem to function properly. A functional disorder may cause discomfort, but it is not serious and does not lead to a serious disease.

Until recently, doctors did not know why functional problems happened. Recent research

SOME SUGGESTIONS ON HOW TO REDUCE GAS IN THE DIGESTIVE TRACT

If you are bothered by excessive belching or flatus, and your physician has determined that you have no serious disease, the following suggestions may be helpful:

- Eat meals slowly, and chew your food thoroughly.
- Check with a dentist to make sure dentures fit properly.
- Avoid chewing gum or sucking on hard candies.
- Eliminate carbonated beverages like beer and soda from your diet.
- Avoid milk and milk products if you are lactose intolerant.
- Eat fewer gas-producing foods such as cauliflower, brussel sprouts, bran, beans, broccoli, and cabbage.
- Try exercises such as situps to increase tone if abdominal distention is a problem.

If your symptoms persist, go back to your doctor. Though your troublesome symptoms may be relieved by a change in dietary habits or appropriate exercises to increase muscle tone, your doctor may want to perform tests to ensure that your symptoms are not caused by abnormalities in your digestive tract.

discoveries, however, suggest a possible explanation. The motion of the digestive tract seems to be governed by a delicate pattern of electrical impulses, in much the same way as muscles of the heart are governed. Some researchers think that when these electrical impulses are disrupted, the contractions of the intestinal muscles become disorganized. This disorganization can result in a variety of symptoms, including pain, diarrhea, constipation, bloating, and a sensation that there is too much gas in the system.

WHEN DO GASEOUS SYMPTOMS REQUIRE MEDICAL ATTENTION?

A persistent and troublesome increase in the frequency or severity of belching or flatulence should prompt you to seek medical attention. Your doctor may review your diet and eating habits and advise appropriate changes. Nervous tension, which also can contribute to symptoms by increasing air swallowing or by causing changes in dietary habits, might also be assessed. However, since gaseousness, abdominal bloating, crampy pain, or distention could be caused by abnormalities in the upper or lower gastrointestinal tract, your doctor may also recommend appropriate diagnostic tests.

DO OVER-THE-COUNTER DRUGS RELIEVE GAS?

Though many television advertisements insist that their products relieve gas, scientific studies do not back up these claims. One drug that scientists had high hopes for—simethicone—has an antigas effect in test tubes. However, this drug does not seem to relieve symptoms of gas in most people.

Some people believe that antacids can be used to relieve gas pains. This is not the case. Antacids may be helpful for heartburn and peptic ulcers, but they do not relieve symptoms attributed to gas.

If you have trouble with gas, doctors recommend that you rely on the guidelines outlined above. If these do not provide relief, see your doctor.

GLOSSARY

ABDOMINAL RECTUS MUSCLES
The two muscles which run on either side of the midline and are responsible for maintaining "tone."

BLOATING
A feeling of fullness in the mid-abdominal region often occurring after meals.

DISTENTION
A visible increase in the waistline often occurring after meals.

FERMENTATION
The process by which bacterial enzymes break down substances and release gas. In the colon, bacteria break down undigested food releasing hydrogen, carbon dioxide, and other gases.

FLATULENCE
The passage of gas through the rectum; a normal occurrence but troublesome if the frequency, odor, or volume is excessive.

LACTASE
An enzyme produced by the small intestine and required for the digestion of milk and milk products.

LACTOSE
The principal sugar in milk. If lactase is insufficient, drinking milk can result in flatulence, crampy pain, or diarrhea.

SPLENIC FLEXURE SYNDROME
Gaseous distention in the left, upper portion of the colon leading to left, upper abdominal discomfort which may radiate to the left chest and be confused with heart disease.

TRACE GASES
Gases that are present in very small amounts.

Dr. Harris R. Clearfield is a professor of medicine at Hahnemann Medical College & Hospital and an expert on gastroenterology. In this paper he has provided an overview of some current information. However, individual patients and their problems vary greatly, so to obtain specific answers about yourself, you must consult your own doctor.

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